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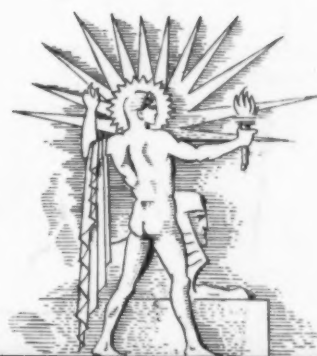
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JUN 28 1938

DETROIT

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



June 25, 1938

Clouds

See Page 415

A SCIENCE SERVICE PUBLICATION

Do You Know?

The main ingredient in both hair and fingernails is the same—a substance called keratin.

Whether the Egyptians had a method of writing music is not known; but the Greeks had one.

The United States draws on practically every country of the world for its supplies of crude drugs.

Wood ticks are most abundant in spring and early summer, and usually disappear around August 1.

The forerunner of the grindstone was the gritty rock or sand in which primitive man sharpened his tools.

When times were hard in the Middle Ages, feudal lords worried because they couldn't put their boys through knight-hood.

The chemical industry is practically depression-proof, according to one chemist, because it is continually pioneering into new industrial lines.

Turkey took no complete census in the days of the Sultans, because the Mohammedans would have fought any intrusion of head-counters into the harems.

A museum at Fredericksburg, Va., vividly portrays Civil War conflict, not only to show what nineteenth century fighting was like, but also to show how war deals with man and with his cultural progress.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

ASTRONOMY

Is the sun farther from the earth in summer or in winter? p. 412.

BOTANY

What single instrument is needed for greatest pleasure in pressed flower collecting? p. 414.

GENERAL SCIENCE

How does a scientist believe immortality is achieved? p. 411.

MEDICINE

How is gold used against arthritis? p. 408.

What diseases are the pains of spinal arthritis mistaken for? p. 408.

What scientist visions cure of human organs outside of the body? p. 413.

When should rheumatism receive treatment? p. 408.

METALLURGY

Can copper be made as hard as steel? p. 411.

MICROSCOPY

Who was the first to look at bacteria? p. 410.

OCEANOGRAPHY

Will icebergs menace Atlantic shipping this summer? p. 409.

PHYSICS

How rapidly can a quartz crystal vibrate? p. 411.

PSYCHIATRY

How are scientists searching for a new cure for schizophrenia? p. 407.

How can the minute electric currents in the eyes aid the student of diseased minds? p. 415.

PUBLIC HEALTH

How can spotted fever be avoided? p. 407.

ZOOLOGY

Where does the rare black barking deer live? p. 411.

According to the Old Testament, the Hebrews were forbidden to destroy trees, in warfare against a city.

The green malachite with which Egyptians painted their eyelids was more than decoration—it offered some protection from the glare of the sun.

It is estimated that as much as \$1,000,000,000 of new capital will be spent on expansion of chemical enterprises within the next 18 months.

Aristotle attributed a good deal of gray hair in his day to the Greek custom of applying perfumed and spiced ointment—very drying—to the hair at banquets.

Shakespeare mentioned America once in his plays: in "The Comedy of Errors."

The current seven-years' drought has driven 100,000 farm families from the Great Plains.

Among the surprising developments in plastics is a jewel-like material that "freezes" when heated.

Rabies has been kept out of England and Hawaii by careful quarantine on dogs, and other rigid precautions.

Makers of metal slide fasteners report that 72 different industries are using these fasteners in more than 400 articles.

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PSYCHIATRY

Specifications Being Made For New Mental Disease Cure

Drug That May Be Used As Are Insulin and Metrazol To Treat Schizophrenia; Will Not Shock Patients

A DRUG better and less severe than either insulin or metrazol as a sanity-restoring remedy for the hitherto hopeless mental ailment, schizophrenia, seems promised by research reported by Dr. G. Edward Hall of the University of Toronto at the meeting of the American Psychiatric Association.

Appropriately enough, this important work is going on at the laboratories and under the direction of Sir Frederick Banting, the man who gave insulin to the world in the first place as a life-saving remedy for diabetes.

The drug that may be the weapon for final conquest of schizophrenia, most widespread mental disease, has not yet been found. Specifications for it, however, are being prepared in the studies reported, and the search for the drug is already under way.

"Neither insulin nor metrazol," Dr. Hall said while fellow scientists were congratulating him and acclaiming his work, "will be the ultimate drug used to produce beneficial effects in schizophrenia."

The ultimate drug, according to present specifications, will be one which either gives the brain anemia temporarily or slows down its electrical activity, or perhaps does both, because careful laboratory investigations by a whole team of scientists, including physiologists, a neurologist and an electrical engineer, show that the two effects which both insulin shock and metrazol shock produce in animals are brain anemia and a change in electrical activity to a pattern of very slow, random brain waves. These two effects, presumably, and no others, are responsible for the cures being achieved by insulin and metrazol.

In addition, the new drug will probably not produce convulsions and patients will not have to undergo anything like the severity of the shock treatment now used to reclaim their minds from the unreal and often unhappy world of schizophrenia.

Besides Sir Frederick Banting and Dr. Hall, the research team which is un-

ravelling the mystery of why insulin or metrazol can restore sanity consists of Dr. W. R. Franks, Dr. B. Mendel, B. Leibell, J. E. Goodwin and Dr. D. P. C. Lloyd. The need for such a team of scientists drawn from various fields was emphasized by Dr. Hall, who said that schizophrenia and its chemical or pharmacological cure is too big a problem to be attacked from one angle or by one man.

The aid of psychiatrists, Dr. Hall said, will be enlisted when he and his associates are ready with a drug for use in treating patients.

Psychiatrists are enthusiastic because work such as Dr. Hall reported promises not only a better weapon for treating schizophrenia but also greater knowledge of the physical effects of insulin or metrazol on the brains of the patients. This research of the Toronto scientists also offers promise of finding the defect or fault in the physical mechanism of the brain that results in schizophrenia, in other words, the cause of the disease.

The psychiatrists have so far been working in the dark with insulin and metrazol, getting good results in many cases, but not knowing exactly why. Even the original discoveries of insulin shock treatment by Dr. Manfred Sakel of Vienna and of metrazol treatment by Dr. L. Von Meduna of Budapest seem to have resulted from what might be termed good "hunches."

A note of caution on the whole problem of shock treatment of schizophrenia was sounded when psychiatrists from all over the country reported details of their results. Reminder of direct danger appears in one report of three deaths in insulin-treated patients.

Further caution is urged on the ground that not enough time has elapsed to make sure that the cures will be lasting. Even if they should not be, the treatment is worthwhile in one psychiatrist's opinion because it at least restores patients to useful, normal life for a period of time, if not for life.

Science News Letter, June 25, 1938



KNOW THEM?

These two very different looking creatures are both wood ticks. One is enlarged from gorging on a dog host.

PUBLIC HEALTH

Danger of Spotted Fever Seen in Large Crop of Ticks

THIS year's crop of wood ticks is unusually large, particularly in the East. Vacation haunts have hordes of them. More surprising is the fact that vacant lots in cities are for the first time playing host to the common dog, or wood, tick.

One in several hundred of these ticks may carry the virus of Rocky Mountain spotted fever. That one tick, which in no way can be distinguished from the rest, may cause a fatal infection in the person it bites.

The *Journal of the American Medical Association* (June 4) carries a statement on prevention of dangerous wood tick bites.

Keep the ticks from gorging on the blood of dogs. Pick the ticks off with a pair of forceps or tweezers. Dust the dog every five days with derris powder. Handle the ticks with care.

Wear boots laced over the trouser legs when walking in tick-infested regions.

Feel the back of your neck and head, their favorite feeding places. Examine children carefully in these spots twice a day. This will reveal the presence of a tick in time to prevent a fatal bite.

Examination of the whole body is necessary after exposure to ticks. If one is found, pull it off at once. Disinfect the bite and the surrounding tissues by in-

**DANGER!**

The wood tick is much smaller than he appears in this enlarged picture, but if he is one of the few infected with spotted fever he is a real menace.

serting a round toothpick dipped in iodine into the exact spot where the tick was attached and drilling it in slightly.

To detick clothing, place it in a vessel that can be tightly covered and set on top of it a pan containing half a teacupful of carbon tetrachloride or carbon disulfide. A few hours of such fumigation kills all ticks.

Wood ticks are numerous along the eastern coast from Massachusetts to Florida, especially within a few miles

from shore. Texas and Florida have a great many. Parts of Iowa, Minnesota and Wisconsin are infested.

Islands off the coast of Massachusetts and South Carolina are heavily infested, especially Martha's Vineyard, Nantucket and Naushon.

The Narragansett Bay islands have many. The eastern half of Long Island and along Chesapeake Bay in Maryland are other areas popular with ticks.

Science News Letter, June 25, 1938

MEDICINE

Arthritis Not Now Hopeless; Early Treatment is Needed

"RHEUMATISM—or arthritis, to give it its fashionable name—is no longer hopeless, something can be done about it if patients get at it early, take it seriously, and play the game with the doctors."

This optimistic statement was made by Dr. Loring T. Swain of Boston, secretary of the American Rheumatism Association at its meeting in San Francisco.

"If the layman who gets rheumatism would take it seriously," said Dr. Swain "and go into the hospital to have his

case studied, when he first has twinges in his joints, much more could be done for him.

"Treatment must be individual and is much more effective in the early stages than after the condition has run until the patient is crippled.

"The situation with regard to rheumatism today is about what the tuberculosis situation was many years ago. In the old days people considered tuberculosis hopeless and did not see a doctor until the last stages of their illness.

Now tuberculosis is being treated in the pre-tuberculous stage and the American Rheumatism Association and similar associations in 20 different countries of the world hope to make the same progress in the treatment of this widespread ailment."

Sulfanilamide Treatment

Getting down to specific methods of treatment, Drs. Walter Bauer and H. C. Coggeshall of Boston reported that sulfanilamide, new and popular chemical remedy, is the most effective treatment yet devised for gonorrheal arthritis but is not effective in ordinary rheumatoid arthritis, which is the commonest variety.

Sulfanilamide has been used to cure cases of blood poisoning, septic sore throat, erysipelas and other infections including gonorrhea. It cures cases of gonorrheal arthritis in three to four days.

In ordinary arthritis which is not due to gonorrhea, this new remedy is, unfortunately, ineffective. Methods of treating ordinary arthritis include rest, diet regulations, clearing up of infections in teeth and tonsils and other measures indicated by study of the individual patient.

Gold Salts Tried

Physicians in Europe have reported success in treating chronic arthritis with gold salts. Drs. J. Albert Key, Herman Rosenfeld and O. E. Tjoflat, all of St. Louis, reported good results with this same treatment in their patients. American physicians, however, have in general been afraid to use this treatment because of the danger involved.

The gold treatment consists of injecting gold salts into the patient's body. The danger lies in giving more of this foreign material than the body can handle. Unless very carefully administered the treatment might prove fatal.

Gold salts are derived from gold by chemical treatment.

Spinal Arthritis

Pains which are often attributed to ailments ranging from angina pectoris to gall bladder trouble or appendicitis are really due to spinal arthritis, Dr. William J. Kerr of San Francisco pointed out.

Dr. Kerr, who presided at the sessions of the American Rheumatism Association, as president, told of cases in which appendicitis operations were performed which turned out to be cases of

spinal arthritis. Such cases illustrate the need for both doctors and laymen paying more attention to arthritis, it was pointed out.

Vaccine Questionable

The value of vaccines in treatment of arthritis appeared questionable on the basis of experiments reported by Drs. D. Murray Angevine, Russell L. Cecil and Sidney Rothbard of New York City.

Vaccines have been used with the idea that some cases of arthritis were due to germ infections, specifically streptococcus germs.

The three New York doctors reported that they could produce the same arthritis-like changes in the joints of animals by injections of streptococci whether the animals were immune to these germs, sensitized to them or normal.

Growing Pains

So-called growing pains in children are not necessarily rheumatic in origin, Dr. M. J. Shapiro of Minneapolis pointed out. No cause other than rheumatic fever has yet been proved for this condition but evidence is growing that it might also be due to such conditions as stretched muscles, stretched nerves and fast growth of the bones at their growing ends.

Science News Letter, June 25, 1938

MEDICINE

Modern Operation For TB Is Not a Panacea

MODERN operative procedure for treating tuberculosis, of which the lung collapsing treatment is perhaps the most spectacular part, represents no panacea for the "white plague" and should not displace the rest, fresh air and good food treatment for the disease, Dr. F. M. Pottenger, clinical professor of medicine at the University of Southern California, told members of the American Sanatorium Association.

"These trends must be recognized as only one way of treating cases and must not be permitted to destroy the clinical idea of securing the best possible result with the least possible damage for every patient who presents himself to the physician for treatment," he warned.

Periodic return of patients to the sanatorium for a week's check-up to make sure that arrested cases of the disease do not relapse was urged by Dr. Everett Morris of Auberry, Calif.

Science News Letter, June 25, 1938

OCEANOGRAPHY

Icebergs in North Atlantic Are Numerous This Year

Although Only 530 Were Predicted for 1938, 700 Have Already Been Observed; Steamers Take Southern Route

GIANT icebergs are still pouring down from Arctic waters into the steamer lanes of the North Atlantic, reports the Hydrographic Office of the U. S. Navy. Already the year 1938 has seen over 700 bergs reported by the International Ice Patrol Service.

This is nearly 50 per cent. more than the average number of bergs, per year, since 1900. This average is 421. Originally the number of bergs forecast for 1938 was 530 but this number was exceeded before the first of June. Since then the bergs have kept coming down from the north and are "still very heavy," state the Hydrographic officials.

The current influx of ice menace means that European-bound steamers to northern ports must still, for some weeks, take the more southerly path which takes them off the "tail" of the Grand Banks of Newfoundland, rather than the quicker great circle path which penetrates the center of the iceberg danger area.

Many bergs, this year, are reported within a few miles of the fatal spot at latitude 41 degrees, 46 minutes north, and longitude 50 degrees, 14 minutes west, where the Titanic sank on that tragic night of April 14, 1912.

Titanic a Spur

It was the Titanic disaster which spurred international cooperation that has since made the Ice Patrol possible. Four times each day the tiny ships of this patrol send, by wireless, the positions of icebergs sighted.

There have been only three years since 1900 in which more than 1,000 icebergs have been sighted. In 1909 and 1912 some 1,020 bergs were reported and in 1929 the figure reached the modern peak of about 1,350 bergs. Nearly 900 bergs were reported in 1935 and the totals for 1938 may approach this magnitude before the coming of summer causes the retreat of the white and deadly marine hazards late in June and early in July.

Three great ocean currents meeting off the Grand Banks form the crucial zone

of iceberg menace, states the Hydrographic office. From far at the north end of Greenland comes the West Greenland current. Along the frigid shores of Baffin Land comes the famous icy Labrador current which joins with the ice-clogged outpourings of the St. Lawrence. Finally there is the warm Gulf Stream which meets these cold waters and forms the temperature blockade which prevents the further southward march of the icebergs.

"Cold Wall" Warning

Besides radio reports from the Ice Patrol, masters of North Atlantic steamers rely greatly for iceberg warning on the passage of their ship through the famous "cold wall," a sharp boundary layer between the cold and warm ocean currents. In a ship's length the water temperature may change from 54 degrees to 32 degrees. Not only is the temperature of water thus vastly different but even the color of the water is changed. The Arctic water is olive, or bottle, green, while the Gulf Stream is blue.

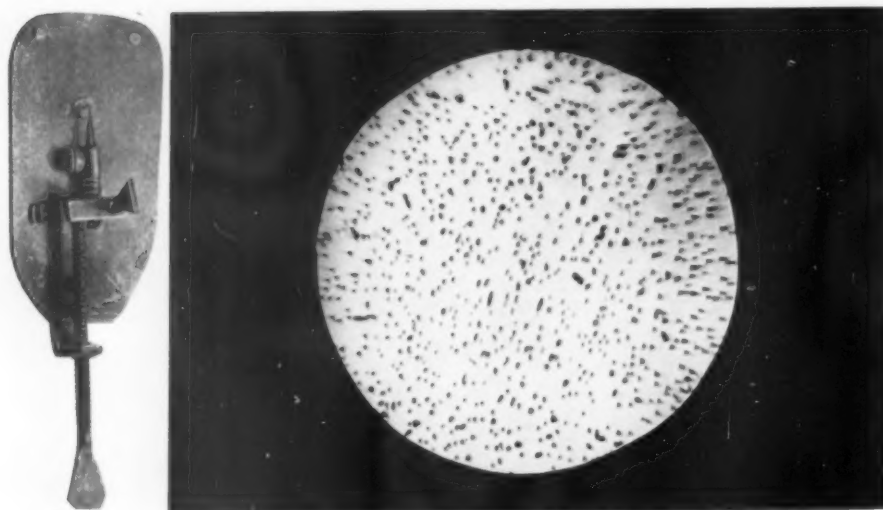
The marked temperature contrast means, meteorologically, that fogs may often prevail over the region. And it is this fog hazard which makes the icebergs so deadly.

In a dense fog lookouts on mastheads are almost useless. A lookout in the bow often gets the first visible indication of an iceberg by the gentle lapping of waves at its base. If the sun is shining above, while the fog obscures the sea, an iceberg takes form as a luminous white mass that can be seen only about 100 yards away. At night it appears close aboard as a dark, sombre shape.

Science News Letter, June 25, 1938

• Radio

Every Friday at 7:30 p. m. EDT, 6:30 p. m. EST, 5:30 p. m. CST, 4:30 p. m. MST, or 3:30 p. m. PST, Science Service cooperates with the Columbia Broadcasting System in presenting over the Columbia coast to coast network a new series of "Adventures in Science" presenting dramatizations of important scientific advances and discussions by eminent scientists.



IT WORKS AGAIN

The paddle-shaped object at the left is a microscope made by the Dutch pioneer Antony van Leeuwenhoek and now kept at the University of Utrecht. The lens, of pin-head size, was mounted in a little opening in the middle of the flat oblong piece of metal. It is still good enough so that it was used by Dr. P. H. van Cittert of the University of Utrecht to make the photomicrograph of the germs that cause common boils shown on the right.

MICROSCOPY

First High-Power Microscopes Still in Good Working Order

Lenses Made 250 Years Ago by Antony van Leeuwenhoek Can Even Now Serve to Make Clear Photomicrographs

LENSES made as an amateur's hobby 250 years ago for the world's first high-power microscope, and better than most lenses made until a hundred years ago, are still good enough today to make clear-cut photographs of bacteria and other one-celled plants and animals.

These bits of carefully-shaped glass, themselves almost microscopic in size, were prepared and used by Antony van Leeuwenhoek, pioneer Dutch microscopist, away back in the latter part of the 17th century.

One of Leeuwenhoek's home-made instruments, now in the University of Utrecht in the Netherlands, has been used in making a number of good quality photographs.

Some of these are reproduced in a book which contains photographic copies of Leeuwenhoek's own reports and a translation of this important document out of 17th-century Dutch into modern English, by Dr. Barnett Cohen of the Johns Hopkins University.

Antony van Leeuwenhoek, amateur genius of 250 years ago, was a public official in the city of Delft. Just what his job was, nobody knows now—or cares very much. He probably did his work well enough to earn his pay and no complaints from his hardheaded Dutch superior officers.

Of importance, however, is the fact that he had enough leisure time to follow an interesting hobby—the grinding and polishing of very tiny but very powerful lenses, through which he peered at drops of rainwater, grains of dust, a louse's eye, and anything else he could lay his hands on. They were the world's first high-power microscopes.

Leeuwenhoek's microscopes were as little like the shining instruments of modern scientific laboratories as can be imagined. The lens, not much bigger than a pin-head, was mounted in a little hole in the middle of a flat piece of brass. In front of that, on the end of a screw that moved it up or down, was a

small pointed holder on which the object to be squinted at could be placed. That was all. The rest depended on the skill, patience, and keenness of vision of Antony van Leeuwenhoek.

The Dutch official-hobbyist looked for the "little animals," as he called all the wriggling bits of life he saw through his lenses, in all kinds of things; rain, snow, well and river water, as well as water in which he had soaked pepper, nutmeg, wheat, etc. He described the swarming life he saw in the amateur's non-technical language, speaking of heads, tails, legs, claws, and ears.

Wrote London

There seem to have been no scientists in the Delft neighborhood who were interested in the results of Leeuwenhoek's peerings, so he wrote long letters about them to the secretary of the then new Royal Society in London, whose name was Henry Oldenburg.

It is one of these letters, written on Oct. 9, 1676, that contains the first recognizable descriptions of what we now know as bacteria. This is the letter that is photographically reproduced and translated in full for the first time by Dr. Cohen.

The letter as transmitted to the Royal Society is not in Leeuwenhoek's own handwriting. It was copied from his notes by a handwriting expert, just as a present-day scientist, not too proud of his own handwriting, might get a typist to copy his manuscript for him. The handwriting is smooth and clerkly, but hard to read now because of changes in forms of letters.

But Antony Leeuwenhoek had no cause to be ashamed of his own script. His signature at the end of the letter, written with a bit of flourish, is clear, firm, and regular, even though a bit angular and rough as compared with the copyist's handwriting.

Amateur though he was, Leeuwenhoek had the attitude of a true scientist toward his work. He described exactly what he saw in plain and straightforward language, and here and there on the margin of the manuscript he made little sketches to make his descriptions clearer.

Even more important as evidence of his scientific spirit, when he ventured an opinion that was primarily speculative, he made it clear that he looked upon it as opinion and not as established fact. That may be one of the reasons why after 250 years and more he is still highly honored by all scientists.

Leeuwenhoek was (*Turn to Page 415*)

IN SCIENCE FIELDS

ASTRONOMY

Our Galaxy of Stars Has Thin Halo Around It

THE GALAXY of stars containing the earth and the sun, often thought of as a flat disk in space, is not as thin as it may seem.

It would take light at least 100,000 years to cross the galaxy at its thickest part even though light travels at approximately 186,000 miles a second, said Dr. Harlow Shapley, director of Harvard College Observatory, at the meeting of the American Association of Variable Star Observers, held at Brown University's Ladd Observatory.

A survey of 2,300 Cepheid variable stars of the cluster type, having periods of less than a day, made possible the new estimate of the shape of the galaxy.

Our galaxy actually is surrounded by a thinly-populated spherical aura or halo of stars, Dr. Shapley added. In this it resembles the Andromeda nebula, one of the nearest of the spiral nebulae.

The advantage of the device is that it substitutes reading one simple instrument for following a number of more complicated devices.

Science News Letter, June 25, 1938

GENERAL SCIENCE

Our Immortality Is Thought's Effect Upon Our Environment

IMMORTALITY has been a philosophic hope through the ages and a promise of almost all religions. It may be said that scientists in general are skeptical of the idea of personal survival after death. There has been a very understandable diffidence among scientists about expressing opinions too urgently about this matter.

As the climax to her informative book about the human organism and its relation to the universe, "Fearfully and Wonderfully Made," (Macmillan) Dr. Renée von Eulenburg-Wiener defines what might be called scientific immortality. Here it is, quoted:

"The physical system of man attains its final equilibrium in death and no longer functions as a means of energy

exchange and transmutation. Yet, man must be considered part of the whole. As such, he is immortal; not in his physical individuality, nor in his dynamic psychic individuality, but in the effect of his dynamic striving toward full development.

"Human life, like all life considered in terms of energy, is but an expression of the universe. The activities of life, physiologic as well as mental and psychic events, depend in part upon environment and in turn leave their imprints on the environmental field. The physical evolution of man may be said to have reached its goal, at least, in general outline. The directing factors for physical development are given at the time of fertilization. They are practically immutable in comparison with the possibilities for mental development. For that reason one finds far more striking differences in mentality, that is, in the psyche of men, than in their bodies.

"Man can evaluate neither the phenomenon of consciousness nor its effect on the environmental field. Yet it is conceivable that thought processes affect the body's bio-electric field and so leave their ghostly footprints in the environmental field. In that sense, in the effect of the dynamic striving toward a more perfect adaptation to the whole, in the further development of consciousness and personality seems to lie not only the purpose of the individual life but also its immortality."

Science News Letter, June 25, 1938

PHYSICS

Quartz Crystal Vibrates 20,000,000 Times a Second

A TINY piece of quartz crystal has just been shaped and fashioned which is destined to spend its working life vibrating 20,000,000 times a second. It will be part of a new radio frequency oscillator being built by the General Electric Company.

The constancy of vibration of quartz crystals is used by broadcasting stations to maintain, virtually without fluctuation, the assigned radio wavelengths on which they transmit.

Science News Letter, June 25, 1938

METALLURGY

New Copper Alloy Is Strong and Hard as Steel

A NEW copper alloy consisting of nearly pure copper and having the strength and hardness of steel, is announced by the Westinghouse Electric and Manufacturing Company.

Containing small amounts of silver and chromium, "Cupaloy," as it is called, has been laboratory-tested to determine its hardness. An engraved insignia on a sample of the metal made a deep impression in a block of steel against which it was pressed by a hydraulic press; the copper alloy was scarcely marked.

P. H. Brace, consulting metallurgist of the Westinghouse research laboratories, five years ago initiated the experiments which have culminated in the practical application of the alloy as welding electrodes, slip rings for generator rotors, cylinder heads in internal combustion engines and for other uses.

Special heat treatments which make the atoms in the alloy re-assort themselves are the key to manufacture of the substance. The alloy has a high electrical conductivity.

Science News Letter, June 25, 1938

ZOOLOGY

Burma Expedition Seeks Rare Black Barking Deer

THE Black Barking Deer, an animal so rare that it has been seen only once by roving explorers, will be sought by the Vernay-Cutting Expedition to North Burma. If the American Museum of Natural History, sponsor of the expedition, acquires one of these deer, it will have the only skin or skeleton of the kind in any world museum.

The Burmese Government has granted permission, through the State Department at Washington, for the expedition to proceed with its plans. The objective is to collect mammals, birds, fish, and plants in a region of northeast Burma never entered by a scientific expedition. The explorers will start on their journey in the autumn.

Science News Letter, June 25, 1938

ASTRONOMY

Summer Stars Are Shining

Typical Is Scorpius, the Scorpion, With Red Antares And Hook-Shaped Tail; Occultation Is Interesting

By JAMES STOKLEY

MOST characteristic of the summer constellations, which are now in the evening sky, is Scorpius, the scorpion, seen low in the south. The maps show its position for 10:00 p. m., Eastern Standard Time, at the first of July and for 9:00 p. m., on the 15th. Antares, red in color, is the most prominent star in this group, but others are easily identified. A hook-shaped row that curls down and to the left forms the tail, while the stars in the vertical row to the right make up the claws. Immediately to the left of the tail is a group outlining a teapot, part of another familiar summer figure, Sagittarius, the archer.

Some of the other bright stars now seen can be found conveniently from the Great Dipper, which appears to the northwest, hanging downwards from the handle. Alkaid is the top star, and the two bottom ones, Merak and Dubhe, are the pointers. A line from them to the right indicates the pole star. By following the curve of the dipper's handle from Alkaid, one comes to Arcturus, in Bootes, the bear-driver, and then to Spica, in Virgo, the virgin.

In addition to Arcturus, Spica and Antares, there are three other first magnitude stars now in the sky, all to the east. Nearly overhead is Vega, of Lyra, the lyre. As this is the brightest star in the summer evening sky, it is easy to find. Below it is a figure shaped like a cross on the side. This is Cygnus, the swan, and the bright star at the northern end of the cross is Deneb. About as high, and farther south, is a bright star attended by a fainter one above and below. The bright one is Altair, and it forms part of Aquila, the eagle.

For most of the month only two planets are to be seen during the evening. They will be easy to locate, because of their brilliance which is much greater than any of the stars. Low in the west, in Leo, the lion, is Venus, brighter of the two. Jupiter, somewhat fainter, appears in the east, in Aquarius, the water carrier, soon after sunset. At the end of the month, these will be joined

briefly by a third planet, Mercury. On the last day it will be farthest east of the sun, and then will set a little more than an hour after sunset. For a day or two before this it might be glimpsed low in the west, below Venus. It will then be brighter than Altair, though not so bright as Vega or Arcturus.

Saturn rises this month, in the constellation of Pisces, the fishes, soon after the middle of the night. Mars, only remaining naked eye planet, is not visible at all. It is too close to the sun, with which it is almost in line on July 24.

Though this month brings no eclipses, it does bring, during evening hours, a star occultation which can be observed with small instruments, such as a good pair of binoculars. If you have access to a small telescope, like those used at the seashore or in the mountains, it will be an even better aid.

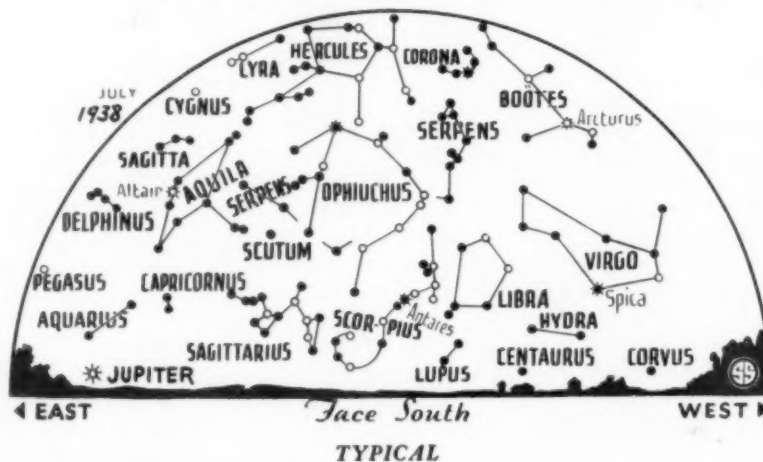
On July 11, the moon, a day before it is full and hence very brilliant, passes in front of the star mu Sagittarii, one of the fourth magnitude in the constellation of Sagittarius. At Washington, the star disappears behind the moon at 10:31 p. m., Eastern Standard Time, and emerges at 12:02 a. m. As the moon moves around the sky from west to east the occultation will occur earlier in the

western part of the country. In California, in fact, it occurs before sunset, so will not be visible, but in the central states it vanishes about 9:00 p. m., Central Standard Time, and emerges about an hour and a half later.

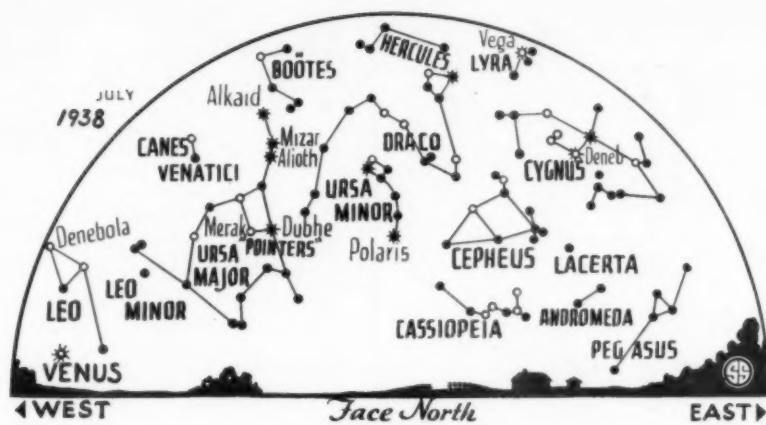
Though this time of year is usually associated with warm weather, it is actually the time when the sun is most distant. On July 2, the earth is in aphelion, that is, farthest from the sun, with a distance of 94,452,000 miles. Thus it is more than three million miles farther than last January 3, when it came to within 91,345,000 miles. The greater distance of the sun in July tends to make its heating effect less than in January but, for us in the northern hemisphere, it is much higher during the day than it was at the start of the winter. This means that its rays are more concentrated, and this much more than compensates for the loss due to the added few million miles over which its rays have to travel.

Of all heavenly bodies, the sun is by far the most important to us earth-dwellers, for all our power, whether from water, from wood, from coal, or anything else, comes ultimately from it. But it is important to astronomers for another reason. The sun is a star, a glowing globe of gas, similar to Vega, Arcturus and others. But they, like all the stars in the night-time sky, are so remote that even through the greatest

◊ * ◊ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS



The Scorpion with its hooked tail shines in the southern skies of July.



TWO PLANETS

Venus, the brighter, shines low in the west. Jupiter is in the east.

of telescopes they appear as mere points of light. Fortunately, the sun is fairly typical and relatively close, so that some of the details of its structure can be observed. These help us to appreciate what is happening in the distant suns.

The most easily observed features of the sun are the spots, which are really enormous whirlwinds in its atmosphere often a hundred thousand miles or more in length. Because they are whirling so rapidly, the gases of a spot are expanding, and, hence are much cooler than the surrounding gases. The cooling is from about 11,000 to 7,500 degrees Fahrenheit, which is far more than anything that can be accomplished by man-made refrigerators.

Sunspots vary over a cycle of approximately 11 years. About 1933, months passed without a spot appearing. Now they are almost always present, for we are nearly at the time of their maximum number. All sorts of terrestrial effects have been credited with variation in step with the sunspots. Some of these correlations are doubtful, but at least there are more displays of the north-

ern lights when they are present. The sunspots shoot electrified particles to the earth, which are drawn in by our magnetic field. As these particles penetrate the rarefied gases in the upper atmosphere, they cause a glowing, something analogous to that of the neon advertising signs that add their ruddy light to our city streets. With sunspots numerous, this summer is likely to see some good displays of the northern lights, or aurora borealis, as they are correctly called. The farther north one is, the more likely they are to be seen, but brilliant displays have appeared as far south as Texas, so any part of the United States has a chance of seeing them.

Phases of the Moon

		E. S. T.
First quarter	July 4	8:47 a. m.
Full moon	July 12	10:04 a. m.
Last quarter	July 20	7:19 a. m.
New moon	July 26	10:54 p. m.
Apogee	July 11	4:00 p. m.
Distance—252,500 miles.		
Perigee	July 26	6:00 a. m.
Distance—222,500 miles.		

Science News Letter, June 25, 1938

MEDICINE

Lindbergh and Carrel Foresee Removal of Organs For Cure

EXPERIMENTS upon living parts of the human body after personality has vanished; manufacture by human organs in vitro of hormones and antibodies needed in the cure of disease; removal of diseased organs from the body, their cure in the Lindbergh pump and their replanting in the human body.

These are some of the wonders of medicine that Dr. Alexis Carrel and Col. Charles A. Lindbergh consider possible for the future as the result of the development of the Lindbergh pump and the surgical and chemical procedures for the cultivation of organism.

Three years ago the world learned

with astonishment of the scientific collaboration of the Rockefeller Institute experimenter and the aviator. Lindbergh had developed a pump that perfused or bathed whole organisms from the animal body with life maintaining liquids. Dr. Carrel carried on the exceedingly careful experiments that promise to help in the solution of an endless number of problems in normal bodily function and disease.

Now in order that others may apply their methods they have published a book of details, the *Culture of Organs* (Hoeber).

Dr. Carrel sees the day when human organs will manufacture in the Lindbergh pump the protective and curative substances supplied today to patients by horses and rabbits.

He dreams of removing diseased portions of the body and sending them to large Lindbergh pumps as patients are now sent to the hospital. A kidney removed for tuberculosis or a leg amputated by osteosarcoma would possibly heal under the influence of an artificial medium in the glass organ hospital. He believes that replanting the portion of the body would offer no difficulty, as surgical techniques for the suture of blood vessels and the transplantation of organs and limbs were developed long ago.

Regeneration of organs within the body is foreseen. Cultivation of the organs in the Lindbergh pump would allow the discovery of the nature of the specific chemicals demanded by these organs for growth and normal function. Then it would be possible to feed these chemicals to the body, renewing the damaged gland, instead of continuing to supply the hormone by injection. To bring about the regeneration within the pancreas of the Langerhans' islands would be a far more efficient method of treating diabetes than to inject insulin daily into the body of the patient.

Science News Letter, June 25, 1938

TESTING RADIO SETS

By J. H. REYNER, B.Sc.

239 pages 115 illustrations

Published (1937) at \$4.50

SALE PRICE, \$3.00

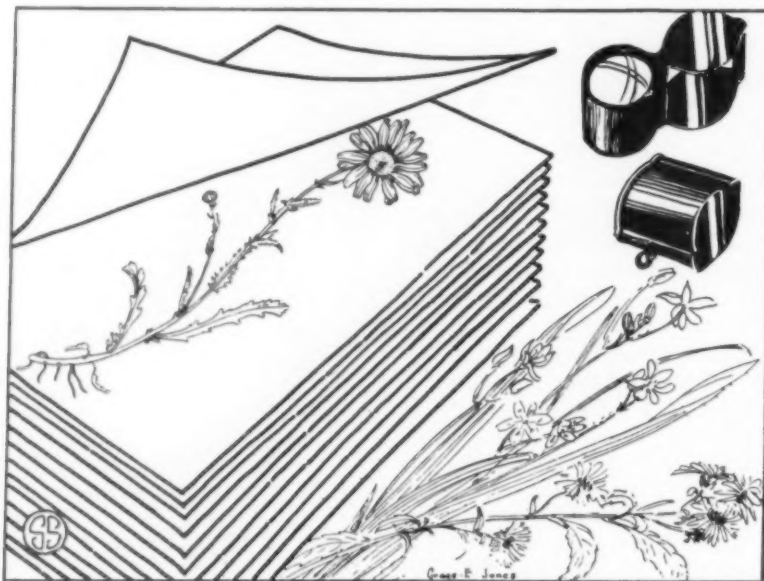
All radio troubles discussed. Full details on tracing faults in receiving sets from aerial to loud speaker.

Send for circular describing this and other late technical works at bargain prices.

THE SHERWOOD PRESS
Box 552, Edgewater Branch
Cleveland, Ohio

Inexpensive Summer Fun— Pressed Flowers Are Popular For Nature Collections

(Second of a series of 12 articles. Next week—Collecting Leaves)



PRESS FLOWERS DRY

Do the work as soon after picking as possible; otherwise they will wilt and will not look well after they are pressed. In preparing them for pressing, lay them out as naturally as possible. The small doublet magnifier (upper right) will add to the joys of collecting by opening a whole new world to your view.

FLOWERS, pressed and carefully kept, probably represent the most nearly universal of all kinds of nature collecting. The practice ranges all the way from a single rose between the leaves of a book of verses, redolent of romance long ago, to the millions of sheets of botanical specimens garnered from the ends of the earth into the barn-like lofts of the great scientific herbaria.

In between these extremes is the hobbyist's summer collection of pressed plants. It is a fascinating and healthful hobby, costing little or nothing to start, and it may eventually lead to more serious undertakings. Many a famous botanist has begun his career as a youngster flattening flowers in an old book or thick magazine.

It is quite possible to make a collection with no other equipment than the traditional old book, but better results can be had (and at no greater expense) with a little different kind of equipment. And for the beginner, this equipment

has the added interest of being exactly the same thing that is used by professional botanists everywhere.

The essential parts of the flower-collector's kit are sheets of newspaper. The standard-size newspaper page, folded across its middle, just as it is delivered on your doorstep, is exactly the same size as the cardboard mountings and manila folders in the great herbaria. A

Books

SCIENCE NEWS LETTER will obtain for you any American book or magazine in print. Send check or money order to cover regular retail price (\$5 if price is unknown, change to be remitted) and we will pay postage in the United States. When publications are free, send 10c for handling.

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SCIENCE NEWS LETTER
2101 Constitution Ave. Washington, D. C.

specimen laid out and pressed in a newspaper-sheet folder is of just the right size and in the right condition to go into a permanent scientific collection.

So the first thing you do is tear up a lot of old newspapers and lay the sheets out, folded separately.

When you bring in your plants from your field trips, lay each one out, in as natural-looking a position as possible, in one of these folders. Small plants may be put several in a folder, but they should not lie across each other, and plants of two different kinds should not be put into the same folder. Keeping species separate to begin with will save the time and trouble of re-handling later.

The folders should not be stacked one right on top of the other. They won't dry out nice and flat that way. The best thing to do is to get some sheets of blotting paper of the same size (the kind used on top of desks) and alternate blotting sheets and folders with plants in them. But if you haven't the money to spend on blotting sheets, use six or eight empty newspaper folders between each two filled ones.

Then put a board or a light frame of wood or other material (you can easily make one out of the side of an orange crate) on top of your pile of folders, load it with stones or bricks, and let it alone for a few days while the plants dry. When you take them out, lay your

For more information

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to Science News Letter, 2101 Constitution Avenue, Washington, D. C.

Please send me **Bulletin 2** containing additional information about collecting wildflowers and your list of books and leaflets on the subject.

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● Earth Trembles

Information collected by Science Service from seismological observatories and relayed to the U. S. Coast and Geodetic Survey resulted in the location of the following preliminary epicenters:

Friday, June 10, 1:06 p. m., E.S.T.
On coast of the state of Oaxaca, Mexico. Latitude 16.4 degrees north, longitude 98 degrees west.

Wednesday, June 15, 2:43.8 a. m., E. S. T.
Off the coast of central Chile; a fairly strong shock. Latitude 31 degrees south, longitude 72 degrees west.

Thursday, June 16, 10:15.2 a. m., Manila Time
Near southern Japanese islands; a strong shock. Latitude 27 degrees north, longitude 127 degrees east.

For stations cooperating with Science Service in reporting earthquakes recorded on their seismographs see SNL May 21.

folders on a shelf, or in a large flat box, for permanent keeping.

Plants should be as newly picked as possible when they are put into the folders for pressing. They will then lie more naturally, and make better-looking specimens. Wilted plants are harder to arrange, and don't look well after they are pressed. If the plant is not too big it should be whole, including both flowers and at least part of the root. If necessary, bend the stem to make it fit into the folder.

While you can make your pressing equipment out of materials that don't cost you a cent, as we have seen, there is one item you should get if you can possibly scrape up the money. That is a good magnifying glass. Not the big kind with a handle, which old people use for reading fine print, but the smaller kind with two lenses at opposite ends of a cylinder, that swings into a frame to protect it when not in use. This kind of magnifier is called a doublet.

Every boy and girl should carry a doublet magnifier, just as he (or she) should have a pocket-knife. These lenses are highly useful not only for examining the fine hairs, veins, etc., on plants, but for looking at a thousand other things. With a doublet you open up a whole new world in your everyday surroundings, that you have never before seen.

Science News Letter, June 25, 1938

From Page 410

apparently interested first in what we now known as protozoa, one-celled primitive animals, for he devotes a great deal of space to descriptions of their appearance and behavior. They are larger and livelier than bacteria, and therefore easier to observe. But that he saw bacteria there is no doubt.

On the third page of the letter to

the Royal Society, he describes the gradual disappearance of a certain kind of microscopic animals over a period of about two weeks. But as the first animalcules dwindled in numbers he notes the appearance of smaller creatures: "I now saw some few animalcules, so small that even through my microscope they almost eluded the eye. And I stopped my observations."

To this, Dr. Cohen appends the remark, "Bacteria, together with protozoa, are doubtless referred to here."

A little further along, describing what he saw in water in which he had soaked some whole peppercorns, Leeuwenhoek writes more in detail.

"The fourth sort of animalcules, which floated about amongst the other three sorts, were incredibly small; indeed, so small, in my sight, that I judged if all 100 of these very small animalcules were stretched out against one another, they would not reach the length of a coarse sand-grain. This being true, then ten hundred thousand of these living creatures should not be able to fill the volume of a coarse sand-grain.

"I discovered yet a fifth sort which had about the thickness of the last-mentioned animalcules, and which were about twice as long."

These "animalcules," Dr. Cohen notes, were "evidently bacteria."

In this very simple language, then, is recorded a hobbyist's discovery of a class of organisms that play vastly important roles in human sickness and health, in farming and industry—invisibly small yet potentially great lives that determine the way the whole world runs.

Science News Letter, June 25, 1938

METEOROLOGY

Weathermen Should Make Greater Use of Clouds

See Front Cover

WEATHERMEN are commonly supposed to go out on the roof, take a look at the clouds, and come back in to tell us what the weather's going to be tomorrow. But really they don't use clouds nearly as much as they should, Prof. Charles F. Brooks of Harvard University indicated before the meeting of the American Meteorological Society.

Forecasters in the United States, excepting only the ones on the Pacific Coast, have the advantage of having a whole continent at their backs, with a good telegraphic network to let them

know where storms are and in what direction they are moving, Prof. Brooks said. Hence they depend very much on this "synoptic" service and tend to neglect the cloud-watching that would help them to improve their score of correct forecasts.

Local weather-watchers base their forecasts almost entirely on their knowledge of cloud behavior, Prof. Brooks pointed out. With sufficient experience, such an observer can make forecasts for from six to twelve hours ahead with better success than a meteorologist who depends entirely on telegraphic reports. But if the meteorologist were to combine a study of the telegrams with judicious cloud-watching he could excel the local weather prophet in both range and accuracy.

Clouds can be useful to students of the weather in other ways, too, Prof. Brooks stated. Their formation and behavior, their direction and rate of travel, can be read by one who has the scientific background in terms of wind direction and velocity, temperature and humidity aloft, and the arrival of polar and tropical air masses.

The illustration on the front cover of this week's SCIENCE NEWS LETTER shows a weather man at Mt. Washington Observatory measuring the rate of travel of the beautiful clouds above him.

Science News Letter, June 25, 1938

PSYCHIATRY

Currents From Eyes May Aid Study of Brain Ills

MINIATURE electric currents that accompany eye movements can be "tapped," amplified and used to aid in the study of certain abnormal brain conditions by a new method reported by Dr. Ward C. Halstead, staff member of the Otho S. A. Sprague Memorial Institute in the division of psychiatry of the University of Chicago Clinics.

Location of brain lesions, which has been facilitated previously by the tapping of the electric currents from the brain itself, known popularly as brain waves, may also be aided by the study of the eye currents, it is hoped.

The new method is especially adapted to the study of mental disease patients, Dr. Halstead said (*Journal of Psychology*) because with it reliable records can be obtained while the subject is walking about. Records can also be made when the patient's eyes are closed, and an attempt will be made later to measure eye movements in this way while the subject is asleep.

Science News Letter, June 25, 1938

•First Glances at New Books

Microscopy

THE LEEUWENHOEK LETTER: A PHOTOGRAPHIC COPY OF THE LETTER OF THE 9TH OF OCTOBER, 1676, SENT BY ANTONY VAN LEEUWENHOEK TO HENRY OLDENBURG, SECRETARY OF THE ROYAL SOCIETY OF LONDON—Barnett Cohen, tr.—*Society of American Bacteriologists*, 46 p., illus., \$3. See page 410.

Science News Letter, June 25, 1938

Medicine—Biology

THE BIOLOGY OF THE PNEUMOCOCCUS—Benjamin White—*Commonwealth Fund*, 799 p., \$4.50. This technical volume contains a wealth of information for scientists since it reviews all literature on the bacteriological, biochemical and immunological characteristics of the pneumonia germ. Not intended for lay reading.

Science News Letter, June 25, 1938

Ornithology

BIRDS AGAINST MEN—Louis J. Halle, Jr.—*Viking*, 228 p., illus., \$2.50. Anecdotal accounts of the author's experiences with birds, both wild and captive, vividly told and as vividly illustrated.

Science News Letter, June 25, 1938

Ornithology

LOGBOOK OF MINNESOTA BIRD LIFE, 1917-1937—Thomas S. Roberts—*Univ. of Minn. Press*, 355 p., \$3.50. Anyone who loves Northern birds, and especially those who are interested in the phenology of birds, will find this book highly interesting reading. It consists of careful seasonal notes made by the author over a period of more than twenty years. Ornithological data of such minute exactness is rarely found so well collated.

Science News Letter, June 25, 1938

General Science

THE RULE OF SCIENTIFIC SOCIETIES IN THE SEVENTEENTH CENTURY (3d ed.)—Martha Ornstein—*Univ. Chicago Press*, 308 p., illus., \$3. First written in 1913 and republished in 1928, this basic study is again made available. To all interested in the history and organization of scientific work, here are described its beginnings in a modern sense.

Science News Letter, June 25, 1938

Medicine

OPIUM ADDICTS AND ADDICTION—John A. Hawkins—*Bruce Humphries*, 156 p., \$2.50.

Science News Letter, June 25, 1938

Biology

EXPLORING BIOLOGY—Ella Thea Smith—*Harcourt, Brace*, 696 p., \$1.84. The many old and the relatively few new

facts that make up the necessary content of the beginning biology course are presented here in a livelier than ordinary style, both in text and illustrations. Laboratory and field exercise are incorporated into the book itself.

Science News Letter, June 25, 1938

Ornithology

BIRD FLOCKS AND THE BREEDING CYCLE—F. Fraser Darling—*Cambridge (Macmillan)*, 124 p., \$1.75. Everyone interested in ornithology, whether as vocation or avocation, will want to read this English scholar's book, for it presents much information not obtainable elsewhere. Gulls were the principal objects of Dr. Darling's study.

Science News Letter, June 25, 1938

Zoology

THE AMERICAN BISON—Martin S. Garretson—*New York Zoological Society*, 254 p., illus., \$2.50. The bison as an animal and as an intimately inwoven part of American history fills this book. The author, who is secretary of the American Bison Society and curator of heads and horns at the New York Zoological Park, has known the land that was once the bison's ever since the 1880's.

Science News Letter, June 25, 1938

Physiology

THE BRAIN AND ITS ENVIRONMENT—Sir Joseph Barcroft—*Yale Univ. Press*, 117 p., illus., \$2.

Science News Letter, June 25, 1938

Medicine

CRIPPLED CHILDREN: THEIR TREATMENT AND ORTHOPEDIC NURSING (2d ed.)—Earl D. McBride and Winifred R. Sink—*Mosby*, 379 p., illus., \$3.50.

Science News Letter, June 25, 1938

Medicine

ON THOUGHT IN MEDICINE—Hermann von Helmholtz—*Johns Hopkins Press*, 27 p., 75 c.

Science News Letter, June 25, 1938

Medicine

THE CULTURE OF ORGANS—Alexis Carrel and Charles A. Lindbergh—*Hoerber*, 221 p., \$4.50. See page 413.

Science News Letter, June 25, 1938

Zoology

OFFICIAL ILLUSTRATED GUIDE BOOK TO THE PHILADELPHIA ZOOLOGICAL GARDEN—Roger Conant—*Zoological Society of Philadelphia*, 108 p., 25 c. Descriptions with abundant illustrations, of the animals in the Philadelphia Zoo.

Science News Letter, June 25, 1938

Exploration

ON TOP OF THE WORLD: THE SOVIET EXPEDITION TO THE NORTH POLE 1937-1938—Lazar Brontman—*Covici, Friede*, 343 p., illus., \$3. A stirring tale of man's conquest of nature. Brontman, the correspondent for the Moscow Pravda, and one of those who accompanied Ivan Papanin and his three fellow-scientists to the Pole and who was a member of the rescue expedition, gives a complete account of what must go down as one of the most important expeditions of modern times—the nine months of drifting on an Arctic ice floe in the interest of science.

Science News Letter, June 25, 1938

Botany—Exploration

PLANT HUNTER'S PARADISE—F. Kingdon Ward—*Macmillan*, 347 p., illus., \$3.50. In Upper Burma and the adjacent parts of Tibet, latitudes that would otherwise be tropical are modified to temperate by altitude. Here, blessed by abundant moisture, develops an amazing wealth of vegetation. This corner of the world is hard to reach, so it is a constant temptation for botanical explorers. In this book, one of the best known of that interesting genus sets down his experiences with both plants and people of this almost-fabulous country.

Science News Letter, June 25, 1938

Paleontology—Zoology

THE WEST AMERICAN CENOZOIC ECHINOIDEA—U. S. Grant IV and Leo George Hertlein—*Univ. of California Press*, 225 p., 30 pl., \$3. In this monograph the echinoids of quaternary and recent times are treated as a continuum—a feature which will undoubtedly appeal to students of the group.

Science News Letter, June 25, 1938

Biology

SEASON OF BIRTH, ITS RELATION TO HUMAN ABILITIES—Ellsworth Huntington—*John Wiley*, 473 p., \$3.50. The season of birth not only is important for the individual but has had its influence on the development of mankind, it appears from Dr. Huntington's study. In this book he sets forth his reasons for believing this thesis.

Science News Letter, June 25, 1938

Medicine

DIGESTIVE TRACT PAIN: DIAGNOSIS AND TREATMENT, EXPERIMENTAL OBSERVATIONS—Chester M. Jones—*Macmillan*, 152 p., \$2.50. For medical scientists and physicians.

Science News Letter, June 25, 1938

